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Silicon Solar Cells Improved by Lithium Doping

Significant progress has been made recently in understanding many of the characteristics of lithium-doped solar cells and in the techniques required to fabricate uniform, reproducible items.

In an effort to bring together the findings of scientists working in this field, a conference was recently held at which eight papers were presented covering development of the lithium-doped silicon solar cell. Studies presented included those on fabrication techniques, the effects of dopants on the radiation sensitivity of silicon, the annealing of electron damage in lithium-doped silicon as a function of temperature, and electrical studies made of electron-irradiated lithium-containing silicon and silicon solar cells.

In summary, the output for lithium-containing solar cells has been improved to the point where the cells exhibit radiation resistance superior to that exhibited by state-of-the-art cells presently in use, and far superior to that exhibited previously by lithium-containing solar cells. Significant improvement has also been obtained in understanding the effects of materials and process parameters on the resultant cell characteristics, which result in greater flexibility of cell design

and greater capability for optimization of cell design for specific mission requirements. Greater control and reproducibility of cell processing have been achieved.

Note:

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Reference:

NASA-CR-106770 (N70-12104), Proceedings of the Conference on Effects of Lithium Doping on Silicon Solar Cells

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